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**UXO REMEDIATION SUPPORT PLAN
WORK PLAN ADDENDUM
REMEDIATION OF SITE 24
NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA**

Prepared for:

DEPARTMENT OF THE NAVY
Contract No. N62470-97-D-5000
Atlantic Division
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6500 Hampton Boulevard
Building A (South East Wing) 3rd Floor
Norfolk, Virginia 23508

Prepared by:

Shaw Environmental & Infrastructure, Inc.
(formerly OHM Remediation Services Corp.)
LANTDIV Program Management Office
5700 Thurston Avenue, Suite 116
Virginia Beach, Virginia 23455-3302

William L. Hughes

William L. Hughes, R.G.
Project Manager

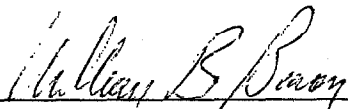
Roland Moreau

Roland Moreau, P.E.
Program Manager

September 2002
Task Order 0084
Shaw/OHM Project 837422

Site-Specific UXO Remediation Support Plan Approval
Remediation of Site 24
Naval Weapons Station, Yorktown
Yorktown, Virginia

I have prepared this site-specific UXO remediation support plan attachment for the work performed at Site 24 at Naval Weapons Station, Yorktown, with respect to project hazards, regulatory requirements, and Shaw/OHM procedures.



William Bacon
OE Technical Director



Date

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List of Acronyms

AEDA	Ammunition Explosives Dangerous Articles
AHA	Activity Hazard Analysis
ATF	Alcohol, Tobacco, and Firearms
BATF	Bureau of Alcohol, Tobacco, and Firearms
BIP	Blow in Place
CCLI	Commerce Control List Items
CEHNC	U.S. Army Engineering and Support Center, Huntsville
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CWM	Chemical Warfare Material
DOD	Department of Defense
DOT	Department of Transportation
DRMO	Defense Reutilization Marketing Office
EBCs	Electric blasting caps
EED	Electro-explosive devices
EMR	Electromagnetic Radiation
EODB/TM	General Information on EOD Disposal Procedures
EP	Engineering Pamphlet
EZ	Exclusion Zone
HE	High Explosive
HTRW	Hazardous, Toxic, and Radioactive Waste
MCX	Mandatory Center of Expertise
MDI	Modernized Demolition Initiators
MLI	Munitions List Items
MPH	Miles per hour
NAVSEAINST	Naval Sea Systems Command Instruction
NEW	Net Explosive Weight
NWS	Naval Weapons Station
OE	ordnance and explosives
OP	Ordnance Publication
PPE	Personal Protective Equipment
RCRA	Resource Conservation and Recovery Act
ROICC	Resident Officer in Charge of Construction
SDA	Safe Disposal Area
SOP	Standard Operating Procedure
SSHASP	Site-Specific Health and Safety Plan
SUXOS	Senior UXO Supervisor
TNT	Tri-Nitro-Toluene
QRP	Qualified Recycling Program
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UXO	unexploded ordnance

1.0 INTRODUCTION

OHM Remediation Services Corp. (A member of Shaw Environmental and Infrastructure, Inc.) has been retained by the Department of the Navy, Facilities Engineering Command (NAVFACENGCOM), Norfolk, Virginia, under Task Order No. 84 (TO#84) to perform remediation of contaminated soils at Site 24, Naval Weapons Station Yorktown (NWS Yorktown), located in Yorktown, Virginia. The remediation goals for the project are to clean up these sites to residential cleanup levels.

This Unexploded Ordnance (UXO) Remediation Support Plan supplements the basic work plan for hazardous, toxic, and radioactive waste (HTRW) remedial activities under TO #84. It will be used to guide the performance of UXO support operations. It provides the technical basis for observing, locating, identifying and reporting UXO while excavating debris and soil at Site 24 which could possibly contain suspect Ordnance and Explosive (OE) items.

This Plan incorporates the guidance and requirements of Naval Sea Systems Command Instruction (NAVEAINST) 8023.11, Naval Sea Systems Command (NAVSEA) Ordnance Publication (OP) 5, and appropriate elements of the U.S. Army Engineering and Support Center, Huntsville (CEHNC) Engineer Pamphlet (EP) 75-1-2, EP 1110-1-18 and EP 385-1-95a. The UXO Support Plan addresses the standard operating procedures to be used by all Shaw Environmental and Infrastructure (Shaw E&I) personnel to minimize the risk from OE. The procedures for conducting the UXO support are detailed in the following sections of this plan.

2.0 BACKGROUND AND SITE CONDITIONS

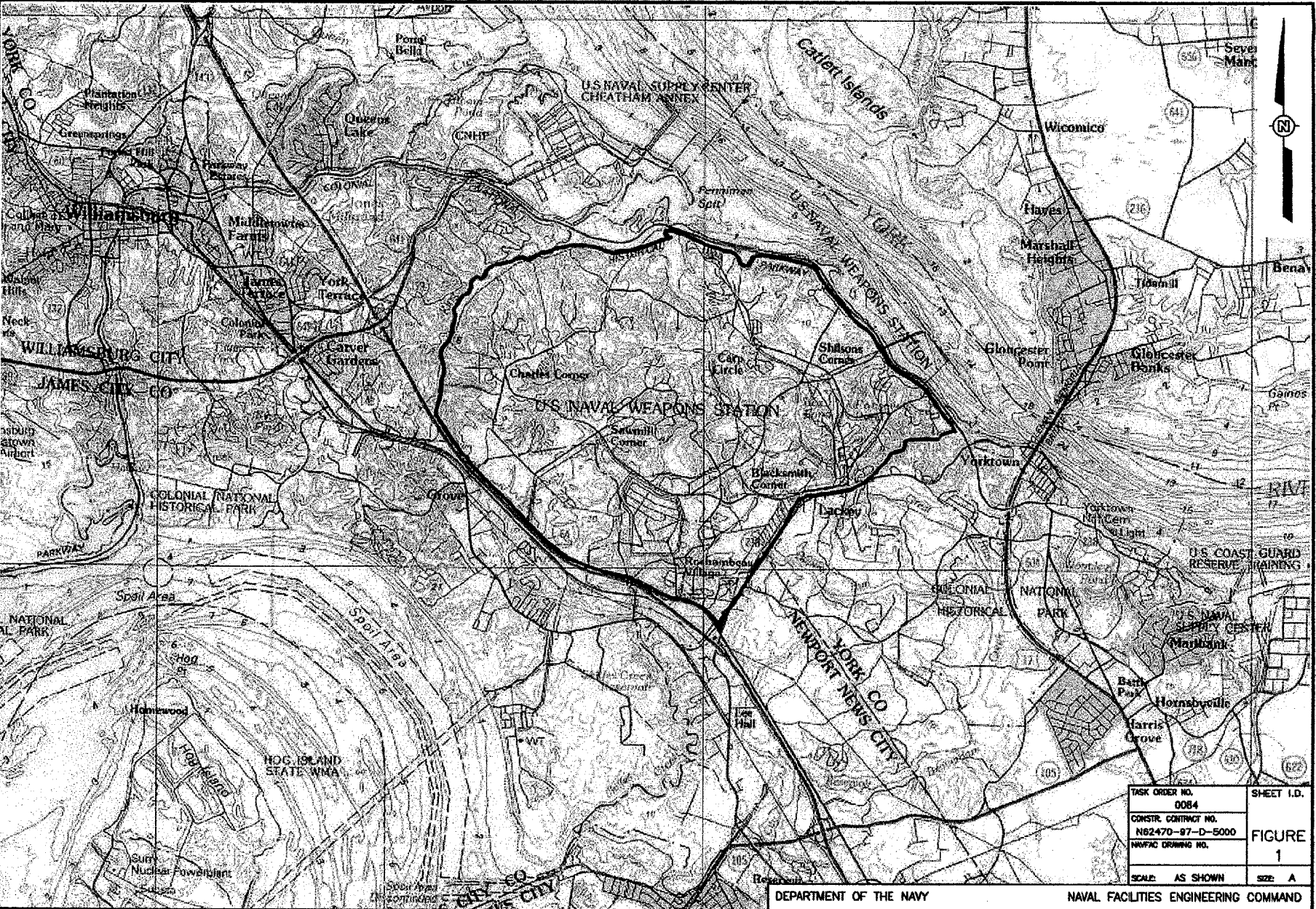
Site 24, the Aviation Field (a portion of former SSA 6), consists of approximately 14 acres located near the helicopter landing pad (Figure 2). The aviation field is bounded on the north by Bellfield Road, on the south by Main Road, on the west by the storage areas and on the east by the railroad tracks.

The site was used as an aviation field until 1927. After 1927 the field was used to store underground caches. This was done for a brief period in time. Later years aerial photographs have revealed that peak surface storage of inert materials (i.e. shipping containers and boxes) occurred in 1968. There are no records suggesting that liquid wastes or hazardous wastes were ever stored on the site. However, the area may have been used for a brief period to burn explosives. According to a study in February 2002 performed by Baker Environmental, the "available data do not indicate significant detections of nitramine compounds" on the site.

The CLEAN contractor reported in February 2002 that VOCs, SVOCs, pesticides and inorganic were detected in surface soils. In both cases no discernable patterns or hot spots of contamination were identified. The remedial investigation identified PCBs, mercury, copper, silver and mercury concentrations being greater than the remediation goals. During the RI activities "ordnance-detonating devices" were observed in two of the test pits excavated to examine the nature of debris buried at the site. These devices are believed to be switches or other components used to detonate explosives and are not shock sensitive. Ground penetrating radar (GPR) was used to evaluate and delineate the extent of anomalies in the subsurface. Four areas (A through D) were identified through the use of GPR. It is assumed that these four areas will be excavated.

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DRAWING DATE 05/30/2002

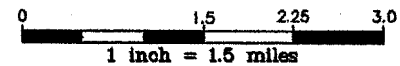
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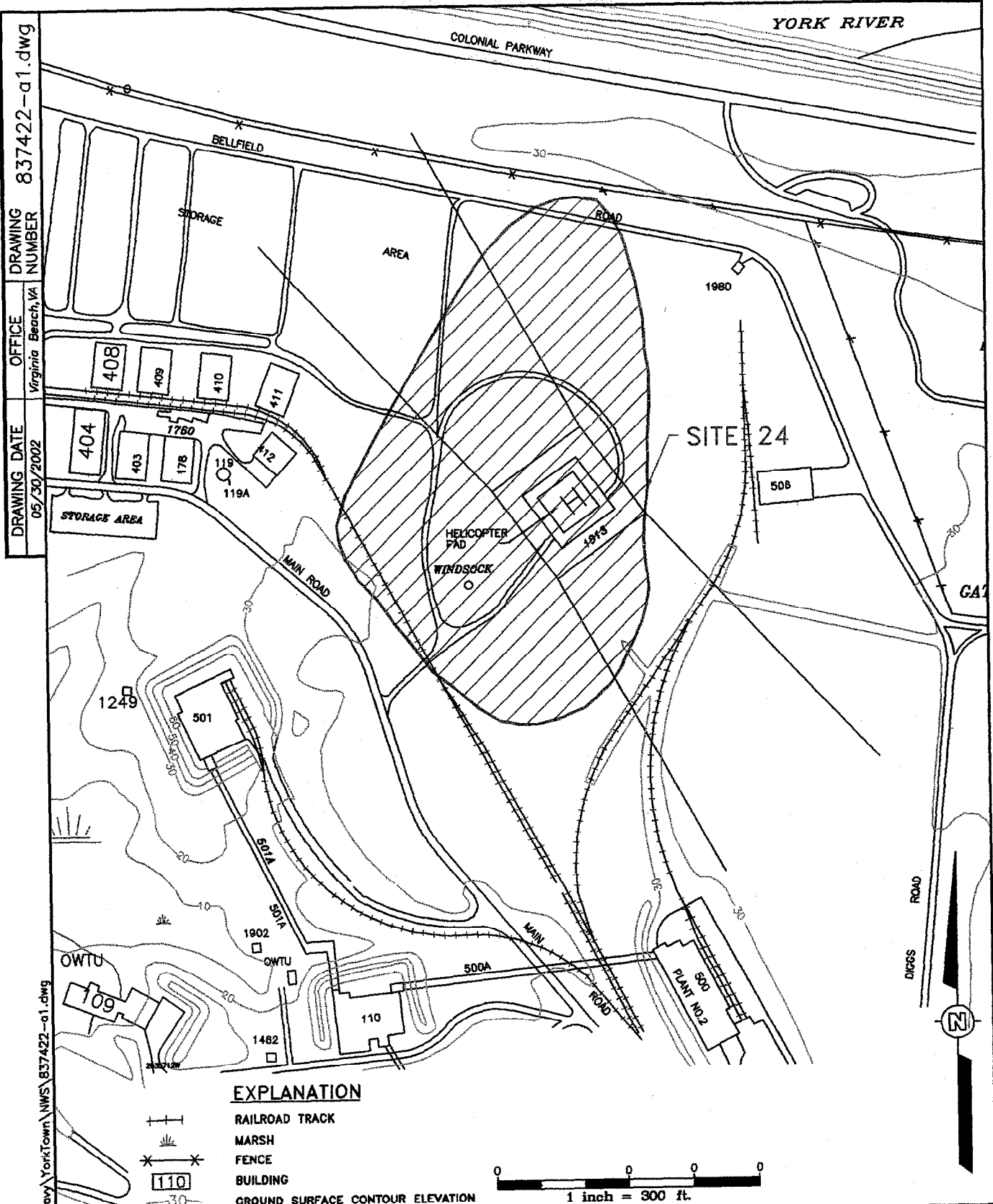
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DEPARTMENT OF THE NAVY
NAVAL STATION ATLANTIC DIVISION
NAVAL WEAPONS STATION YORKTOWN NORFOLK, VIRGINIA
YORKTOWN, VIRGINIA
SITE 24 AVIATION FIELD
SITE LOCATION MAP
PROJECT NO. 837422



EXPLANATION

- RAILROAD TRACK
- MARSH
- FENCE
- BUILDING
- GROUND SURFACE CONTOUR ELEVATION



Shaw Environmental & Infrastructure, Inc.

DEPARTMENT OF THE NAVY
NAVAL STATION
NAVAL WEAPONS STATION YORKTOWN

NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NORFOLK, VIRGINIA
YORKTOWN, VIRGINIA

**SITE 24 AVIATION FIELD
SITE PLAN**

PROJECT NO. 537422

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DRAWN BY	TFR	5/30/02	APPROVED BY	-	

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3.0 OBJECTIVES

The objectives of this plan are:

- To ensure that all personnel involved with the intrusive work have been briefed on the possibility of UXO and that the soils and waste removed from the site during excavation activities are checked thoroughly for hazardous OE/UXO;
- To specify procedures for safely detonating any live OE encountered either by removal to an SDA when determined safe to move or by using blow in place (BIP) methods if determined unsafe to move and
- To isolate, demilitarize and properly dispose of any OE scrap.

4.0 UXO REMEDIATION SUPPORT PLAN

4.1 GENERAL

All site workers will conform with the OE/UXO support procedures during remedial excavation operations. These OE/UXO procedures will be implemented to prevent site workers from coming into contact with UXO and for delineating the methods that the UXO technicians will use if OE/UXO is encountered. The UXO Team will supervise all excavation and debris removal activities at the site. The UXO Team will conduct a visual and magnetometer search to find metallic debris and determine if OE is present. If OE is encountered it will be positively identified as inert UXO by both UXO technicians before it is moved. It is highly unlikely that any chemical warfare material will be encountered. However, procedures to follow are delineated in **Appendix A**.

4.2 UXO PERSONNEL

As required by EP 75-1-2a two UXO technicians will be designated by the Shaw E&I, OE Service Center who are qualified UXO Technician III in accordance with CEHNC EP 1110-1-18. The qualifications of the UXO technicians who will work on this site will be provided to the NWS Environmental Group prior to their commencing work.

4.3 OE/UXO TRAINING

The UXO team will meet with on-site management and construction personnel and conduct a UXO refresher orientation and safety briefing to include:

- Probable site hazards and site-specific safety considerations
- OE/UXO safety procedures
- Responsibilities and lines of authority for any UXO-related response
- Emergency response procedures.

4.4 OE/UXO REMEDIATION SUPPORT DURING EXCAVATION ACTIVITIES

The UXO team will be present at all IITRW excavation activities in areas where the presence of OE is possible. The UXO Technicians will oversee each excavation activity to identify any OE and, if determined inert by both technicians, will remove it for demilitarization, segregation, and certification as OE scrap, free of hazard. Precautions contained in EP 385-1-95a, Basic Safety Concepts and Considerations for Ordnance and Explosives Operations for OE items will be followed.

4.4.1 Excavation Oversight

The UXO technicians will observe the excavation operation by standing in a safe area. Their position should be to the side of the excavator outside of any swing radius. They will be responsible for examining the face of the excavation and the material as it is removed from the excavator bucket. The surface of the excavation will be carefully observed to visually detect UXO before they are disturbed. The excavated material will be sifted with a bucket before it is loaded into the truck. The UXO technicians will take advantage of natural or placed protective structures to shield themselves from the potential hazard of falling or projected debris.

The UXO technician will communicate with the excavator operator via hand signals to stop the excavation if suspected UXO are observed. When this happens, the excavator operator will immediately place the excavator bucket on the ground and shut down the excavator. The UXO technicians will then examine the item to determine if it is UXO. If both UXO technicians positively identify the item as inert, the item will be removed and placed in the appropriate scrap pile. If the item is live OE, or if **any** doubt exists, the item will be assumed to be explosive filled and all work will stop. The item will be marked with a red pin flag and an exclusion zone will be established based on the Net Explosive Weight (NEW) of the item. UXO technicians will use a Field Activity Daily Log to document actions taken each day.

4.4.2 UXO Discovery Unsafe to move

If the item is determined to be unsafe to move, a BIP will be planned and initiated using the demolition procedures described in **Appendix B**. If the situation is determined to pose an imminent threat, requiring immediate attention, an EOD emergency will be declared and EODMUTWO Det Yorktown will be requested to respond.

4.4.3 UXO Discovery SAFE to move

If both UXO technicians have determined that the UXO item is safe to move, they will move the item to a SDA and counter charge the item using the demolition procedures described in **Appendix B**. The sited and permitted EOD range is the SDA of choice. However, if the range is not useable as an alternative site the item will be disposed at a location pre-approved by NWS Yorktown at Site 24. Any on base transportation of UXO will be accomplished in conformance with **Appendix C**.

4.5 EXPLOSIVE MANAGEMENT

Explosives for countercharging UXO will be obtained from a local vendor only if required. No explosives will be maintained at the site. If demolition is required, all efforts will be made to

arrange delivery of the explosives early enough in the day to complete the operation. Procedures are described in **Appendix C**.

4.6 OE SCRAP PROCEDURES

Procedures to follow when demilitarizing and certifying OE scrap are set forth in **Appendix D**.

Safety Note: Cutting torches will not be used unless a positive identification has been made, all cavities of the inert OE item have been exposed, and base safety has approved the technique.

5.0 SITE SAFETY AND PERSONAL PROTECTIVE EQUIPMENT

UXO personnel performing work at Site 24 will follow the Site Specific Health and Safety Plan (SSHASP) presented in the Work Plan. Exceptions to the SSHASP are as follows for the UXO personnel.

- Safety boots will be worn during UXO support operations
- Hard hats will not be worn unless an overhead hazard exists. Hard hats may create an unsafe condition by falling off of the head of a UXO technician at a critical moment

Otherwise, personal protective equipment (PPE) may be worn by Shaw E&I UXO personnel in accordance with the guidance in the referenced document. This is anticipated to be Level "D" PPE modified to include non-steel toed protective boots and to eliminate the requirement for wearing a hard hat if no overhead hazard is present. Both of these modifications comply with the requirements of the CEHNC's EP 385-1-95a *Basic Safety Concepts and Considerations for OE Operations* (June 2001).

A Shaw E&I SSO will work with the UXO team to ensure that the requirements of the SSHASP are followed and that the UXO technician conducts a review of the Activity Hazard Analysis (AHA).

Table 5-1 Summarizes the emergency contacts numbers for UXO support.

TABLE 5-1
EMERGENCY TELEPHONE NUMBERS

<u>Naval Weapons Station Yorktown</u>	
Ambulance /Paramedics	(757) 887-4911
Fire	(757) 887-4911
Police	(757) 887-4911
Yorktown Environmental Group	(757) 887-4707 or (757) 887-4775
Yorktown EOD	887-4177
<u>Hospital:</u>	
Mary Immaculate Hospital 2 Bernardine Drive Newport News, VA 23602	(757) 886-6000
Regional Poison Control Center	(800) 552-6337
<u>Federal Agencies</u>	
Center for Disease Control	(800) 311-3435
National Response Center	(800) 424-8802
American Red Cross	(954) 763-9900
<u>Shaw Personnel</u>	
Project Manager – Bill Hughes	(757) 318-5140
Project Superintendent – James Adair Franklin	(757) 887-5961
Health & Safety Coordinator– Kym Edelman	(757) 318-5132
Shaw E&I (24 hour)	(800) 537-9540

6.0 COMMUNICATION

6.1 UXO SUPPORT PLAN AMENDMENTS OR CORRECTIONS

During the course of the project the hazards, risks, or explosives safety controls may change. Many of these changes will require an amendment to the submission. Other changes may require only a correction to the submission.

6.1.1 Amendment

A change that requires approval. Submit amendments through the same approval chain as the original submission.

- a. A change in the planned reuse that affects the proposed response actions.
- b. A change in the clearance depth that affects the planned land reuse.
- c. The land use restrictions (to be placed in land transfer documents) change for any reason.
- d. The estimated MEC/MC depth changes, causing a change in the clearance depth.
- e. The clearance depth changes from below the frostline to above it.
- f. The removal action incorporates new or modifies engineering controls.
- g. Q-D arcs increase.
- h. A new magazine storage area or demolition ground is established.

6.1.2 Correction

A change that doesn't require approvals. Submit correction to the Explosive Safety Remediation Plan review authorities for information only.

- a. Use common sense in deciding whether to send in a correction to the approved submission.
- b. Example: The area to be cleared increases, but nothing else changes.

6.2 CLOSEOUT REPORT PREPARATION AND REVIEW

Upon completion of all field activities, Shaw E&I will prepare a closeout report documenting site activities and reporting all data. This report will include all daily notes from field activities, a description of each project task, any problems encountered along with corrective measures, project photographs, as-build drawings, and all pertinent analytical data. Also to be included is a list of the UXO/OE found by type, location and depth. Shaw E&I will submit a draft closeout report to the Navy for review and comment. Upon receiving review comments, Shaw E&I will incorporate all comments and will submit the report as the final version.

6.3 PUBLIC INVOLVEMENT

The public is informed of the status of the remedial activities conducted at NWS Yorktown through Resident Advisory Board (RAB) meetings at Newport News, Virginia. These meetings are conducted quarterly and are attended by representatives from NWS Yorktown, Local, State and Federal regulators, environmental contractors and the public. The public will be informed and updated on the status of UXO support activities conducted under TO #84.

APPENDIX A

Chemical Warfare Material Procedures

For

UXO Remediation Support at NWS Yorktown, Virginia

1.0 INTRODUCTION

An extremely remote possibility exists that chemical warfare material (CWM) could be encountered during the remediation activities at NWS Yorktown. Shaw E&I is not authorized to perform CWM-related tasks.

2.0 PROCEDURE

If a suspected CWM is encountered during sampling activities, the procedures listed below will be followed:

- The initial Exclusion Zone (EZ) for a suspected CWM will be established a minimum of 450 feet upwind.
- Neither the suspect item nor the area will be disturbed further after discovery.
- The discoverer will immediately notify the on-site UXO Team Leader.
- The UXO Team Leader will immediately direct the work team to stop work and evacuate the site along a cleared path in an upwind direction. Upon evacuation, the UXO Team Leader will account for all work site personnel.
- The UXO Team Leader will note the location of the suspected CWM to assist with identification and relocation as required.
- The UXO Team Leader will designate a minimum of two individuals to position themselves upwind at least 450 feet to prevent unauthorized personnel from entry into the area.
- The UXO Team Leader will immediately notify the Shaw Project Site Supervisor.
- The Shaw E&I Project Site Supervisor will immediately notify the NWS Environmental Group. The NWS Environmental Group will then call the Technical Escort Unit in Aberdeen, Maryland at (410) 436-8534 during normal duty hours and (410) 436-2773 after duty hours.
- The UXO Team Leader will ensure that the area is secured until properly relieved by active duty explosive ordnance disposal, Technical Escort Unit, or local authority personnel.
- Before work can resume, the work plans will be reviewed for adequacy in consideration of the hazard discovered.

The UXO Team Leader will provide a suspect CWM report including the following information:

- Date and local time of event
 - Location
 - Preliminary identification of suspect CWM
 - A description of events
 - A description of any property damage, personnel casualties, and/or injuries
 - A description of whether medical services or facilities were required
 - A list of immediate notification and support requirements identified during the initial emergency response assessment
-

- Any other pertinent information.

APPENDIX B

Standard Operating Procedure

Demolition Procedures

For

Site 24 at NWS Yorktown

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1.0 PURPOSE

This SOP is intended to assist Shaw E&I UXO Technicians in the safe and efficient handling and disposal of ordnance and explosives (OE) found at NWS Yorktown project Site 24. The procedures contained within this Standard Operating Procedure (SOP) are to be considered general guidelines to aid in the performance of the tasks covered within this SOP.

Experience and ongoing training programs have proven to be the best management tool for executing OE/UXO disposal operations. Adherence to a rigid set of safety standards, policies, and procedures will greatly enhance the overall success of the operation and will ensure the safety of all personnel. It is the responsibility of all personnel regardless of position, to bring to the Project Manager/Senior UXO Supervisor/UXO Safety Officer any deviation from any unsafe conditions.

2.0 BACKGROUND

UXO is by its nature considered hazardous. There is no "safe" procedure for handling and disposal of UXO, merely procedures that are considered to be the least dangerous. UXO personnel must be alert at all time to be in observance of safety precaution. Recovery of UXO is normally accomplished on both active ranges, inactive ranges, and from burial sites. When UXO is recovered and disposed of on site at former firing ranges it is not considered as a solid waste under RCRA but rather as an explosive safety hazard under CERCLA. OE/UXO recovered at project sites will be stored and disposed of as an explosive safety hazard under CERCLA, meeting the intent of RCRA, unless the client directs otherwise. The procedures and checklists contained in this SOP are meant as general guidelines. The senior UXO technician has the authority to deviate as needed, for any unusual circumstance.

3.0 RESPONSIBILITIES

3.1 SENIOR UXO SUPERVISOR

The Senior UXO Supervisor is responsible for the overall performance of the operation. He will ensure that the operations are carried out in a safe, efficient, and economical manner.

3.2 UXO TECHNICIAN III/DISPOSAL TEAM LEADER

Disposal operations will be carried out under the direct supervision of a trained and experienced UXO Technician III/Disposal Team Leader who is responsible for all activities within the scope of disposal operations. The Disposal Team Leader will be on-site during all disposal operations and is responsible for ensuring that all personnel are familiar with their assigned functions.

3.3 UXO SAFETY OFFICER

The UXO Safety Officer is responsible for ensuring that all elements of the disposal operation are conducted in a safe manner and that all safety regulations and procedures are being adhered to. The UXO Safety Officer will ensure that all personnel are trained in the use of their assigned equipment and are familiar with the materials being handled or disposed. The UXO Safety Officer will conduct periodic safety audits of the Disposal Team.

4.0 GENERAL SAFETY PRECAUTIONS

The Site Specific HASP outlines safety considerations for the entire project. In addition, to the HASP the following must be observed:

4.1 BASIC SAFETY CONSIDERATIONS

1. In the event of an electrical storm is within 5 miles of the site, all disposal operations will cease immediately and all personnel will take protective cover.
2. Observe all specific safety precautions applicable to the material being handled or disposed.
3. Ensure that fire protection and first aid equipment are adequate, on-site and available.
4. Ensure that all tools and equipment are maintained in good working order.
5. After handling explosives, ensure that all personnel wash their hands and faces before eating, drinking, or smoking.
6. Ensure that housekeeping functions are maintained at workstations.

4.2 VEHICLE SAFETY PRECAUTIONS

1. Vehicle operators will have, in their possession at all times, a valid drivers license for the class of vehicle they are operating.
2. No more than two persons will be in a vehicle transporting explosive materials. No one is permitted to be in the bed of an open bed truck or trailer.
3. Vehicles will not refuel while carrying explosives on-site. Vehicles being refueled must be at least 100-feet from magazines or trailers containing explosives.
4. Vehicles that have transported explosives will be cleaned of explosive residue prior to being used on other tasks.

5.0 METEOROLOGICAL CONSIDERATIONS

5.1 WEATHER AND METEOROLOGICAL LIMITATIONS AND CONSTRAINTS

1. Demolition and disposal operations will not be conducted during electrical storms.
2. Demolition and disposal operations will not be conducted during periods of reduced visibility. Full and unrestricted view of the disposal area is required. Operations will not be conducted during periods of rain, dense fog, blowing snow, sand, or dust storms.
3. Demolition and disposal operations will not be conducted when winds exceed 20 MPH.
4. Demolition and disposal operations will not be conducted during periods of heavy cloud cover. Heavy cloud cover is defined as overcast skies with more than 90 % of the sky obscured by clouds or a ceiling of less than 1,000-feet.
5. Demolition and disposal operations will not be conducted during periods of heavy weather inversion, i.e., smoke tends to remain on or near the ground.
6. Demolition and disposal operations will not be conducted until at least 30 minutes after sunrise and will be completed at least 60 minutes prior to sunset.

6.0 TEAM BRIEFINGS

6.1 DISPOSAL TEAM LEADER BRIEFING

Prior to performing a demolition operation, the UXO Team Leader will brief all personnel involved in the operation. Topics for the daily briefing should cover, if appropriate, the following key points:

- Type of OE/UXO being disposed.
- Type of counter charge that will be employed.
- Placement and quantity of counter charge.
- Method of initiation (electric, standard non-electric, or shock tube)
- Methods of transporting explosives.
- Route to the disposal site.
- Any engineering controls needed to reduce frag distance reduce the Quantity distance Arc.
- Blasting equipment to be used for initiation. Control of blasting equipment.
- Misfire procedures.
- Post shot cleanup

6.2 DAILY SAFETY BRIEFING

The UXO Safety Officer will conduct a daily safety briefing for all personnel involved in demolition and disposal operations. Topics for the daily safety briefing should cover, if appropriate, the following key points:

- Care and handling of explosive materials.
- Personal hygiene.
- Two-man rule
- Slip, trip, and fall hazards.
- Remaining alert for explosive hazards.
- Location of emergency shelter (if available).
- Parking area for vehicles (vehicles must be positioned for immediate departure with engines running).
- Wind direction (toxic fumes).
- Location of first aid kits and fire extinguishers.
- Route to nearest hospital or emergency aid station.
- Communication in the event of an emergency.

6.3 BRIEF ON PERSONNEL ASSIGNMENTS

The following specific tasks will be assigned to the disposal team and completed prior to completing disposal activities. These tasks may or may not have to be accomplished for the demolition shot. It is the responsibility of the Disposal Team Leader to ensure that all tasks are performed:

- Contact local police, fire department, and Federal Aviation Administration (FAA), as required.
- Contact hospital/emergency response personnel.
- Secured all access roads and paths to the disposal area.
- Visually check area for any unauthorized personnel.
- Designate UXO Technician to maintain custody of blasting machine, fuse igniters, or shock tube initiators.

7.0 OE/UXO HANDLING AND DISPOSAL PROCEDURES

7.1 IDENTIFICATION OF OE/UXO

Prior to any action being performed on an ordnance item, all fuzing will be positively identified. This identification will consist of fuze type by function, condition (armed or unarmed), and the physical state/condition of the fuze (i.e., burned, broken, parts exposed/sheared, etc).

7.2 MOVEMENT OF OE/UXO

Recovered military munitions or UXO will not be moved at these sites. If the area cannot withstand a high-order detonation and the UXO is not safe to be moved, the UXO should be rendered safe by EODMUTWO Det Yorktown EOD technicians. If render safe or movement is not an option then design and implementation of engineering controls to mitigate the effects of a high-order detonation must be accomplished. Coordination with and approval of Base Environmental Department and Base Safety Department is required before detonating a UXO under such circumstances.

7.3 UXO DISPOSAL

1. The Disposal Team, comprised of the UXO Technician III and a UXO Technician II, will inspect the location, condition, and net explosive weight of the UXO to be disposed of.
2. Whenever possible, detonations are to be initiated using either electrical or shock tube demolition methods and techniques. These methods provide the maximum amount of control over the timing of the detonation and allow the detonation to be aborted up to the instant of initiation. The following general procedures will be followed for all disposals by detonation:
3. A UXO Disposal Checklist will be completed (**Attachment A**) for each disposal operation. The completed checklists will be filed with the Field Activity Daily Logs.
4. It is the responsibility of the UXO Team Leader to schedule the timing of disposal shots. The UXO Team Leader will also ensure that all project personnel are accounted for before disposal operations begin.
5. The Disposal Team will then prepare enough explosive charges to perform the planned destructions in a segregated area designated for this purpose. The transportation vehicle will then be loaded with the explosives, initiators, and other equipment required.
6. Initiators will always be transported in a separate container from the main-charge explosives.

7. A minimum separation distance of 25 feet will be observed [for initiators and main-charge explosives while at the disposal site.]
8. In accordance with OP-5 guidance the following fragmentation distances will be observed:

Non-Fragmenting Explosives	- 1,250'
Fragmenting Explosives Less Than 5"	- 2,500'
Fragmenting Explosives 5" or Greater	- 4,000'
9. The Disposal Team will lay out the firing wire
10. All detonations will be double-primed. The firing wire and initiators will be tested for continuity and the UXO Team Leader will observe the UXO Technician position the explosive charge against the UXO. The disposal shot may be tamped to minimize the effects of the detonation. However, never bury the initiators (caps).
11. The initiators will then be connected to the firing wire and secured to the end of the detonating cord or placed into the main charge.
12. The UXO Team Leader will then inspect the disposal shot and return to the safe firing point.
13. Prior to initiation, the UXO Team Leader will ensure that guards are stationed at the roadblocks, scan the hazard/fragmentation area with binoculars, and sound three distinct blasts on an air or vehicle horn. He will then scan the area again and initiate the demolition charge if all is clear.
14. The Disposal Team will conduct an inspection of the shot, after successful initiation of the explosive charge, to ensure complete destruction of the UXO.
15. In the event of a misfire, a 60-minute wait time will be observed. Then a new double-primed initiator will be prepared and used to initiate the charges. The Misfire Checklist (**Attachment B**) will be completed by the UXO Team Leader and filed with the Field Daily Activity Logs.
16. If required by the client the USEPA Regional office will be notified prior to start-up of the UXO storage operations, and upon termination of the operations.

7.4 EXPLOSIVES STORAGE

All explosives will be delivered to the site by a local vendor the day they are required. No explosives will be stored at the site.

7.5 OTHER REQUIREMENTS

- Personnel handling OE materials will receive site-specific training in maintaining environmental compliance in their area of responsibility. This will be in addition to any applicable safety and health training. Training may be classroom or on-the-job.
- Implement engineering controls will be implemented as needed to prevent run-off from the OB/OD area
- All demolition shots will be tamped, if the SUXOS determines that it is safe to install tamping.

ATTACHMENT A

ELECTRIC DEMOLITION PROCEDURES AND PRECAUTIONS

1.0 SAFETY PRECAUTIONS

1.1 General

1. Always follow the UXO disposal procedures specified in TM/EODB 60A-1-1-31 (General Information on EOD Disposal Procedures) and with the specific procedures specified in TM/EODB 60 Series publication for the ordnance involved. Access to these references will be obtained from NWS Yorktown EOD.
2. Always observe the safety precautions specified in TM/EOD 60A-1-1-22 (General EOD Safety Precautions).
3. Prevention of accidents in the transportation, storage, handling, and use of explosives depends on careful planning and the use of proper procedures.
4. All explosive materials are dangerous and must be carefully transported, handled, stored, and used following proper safety procedures and under competent supervision.
5. Always comply with Federal, State and local laws and regulations.
6. Always review all electromagnetic radiation (EMR) hazards and safety precautions.
7. Always review electrical grounding procedures prior to starting disposal operations.
8. Always carry blasting caps in approved containers and keep them out of the direct rays of the sun.
9. Never handle, use, or remain near explosives during the approach or progress of an electrical storm.
10. Never use unexploded dud-fired ordnance items for demolition purposes.
11. Never strike, tamper with, or attempt to remove or investigate the contents of a blasting cap (electric or non-electric), detonator, or other explosive initiating device. A detonation may occur.
12. Never pull on the electrical lead wires of electric blasting caps, detonators, or other electro-explosive devices (EED). A detonation may occur.
13. Never attempt to remove an unfired or misfired primer or blasting cap from a coupling

base. There is a high risk of an explosion.

14. Always point the explosive end of blasting caps, detonators, and explosive devices away from the body during handling. This will aid in reducing injuries should a detonation occur.

1.1 Electric Priming

1. Always test the circuit for continuity and proper resistance using a blasting galvanometer or an instrument specifically designed for testing electric detonators and circuits containing them.
2. The testing of electric blasting caps for continuity must be done at least 50 feet downwind from any explosives prior to connecting them to the firing circuit. This is a change from the previous 25 feet. However, electric blasting caps, in an approved container, must still be located at least 25 feet from other explosives.
3. Never hold the blasting cap directly in the hand when uncoiling the lead wires. Always hold the lead wires approximately 6-inches from the cap. This will minimize injury should the blasting cap explode. The lead wires of the blasting cap should always be straightened by hand and never thrown, waved, or snapped to loosen the coils.
4. Always unroll the blasting cap leads so that the cap is as far as possible from the operator and pointing away from him. Always place the blasting cap in a hole or behind a barricade before removing the shunt and testing for continuity. Always make sure that the cap is not pointing toward other personnel or explosives.
5. Always keep electric blasting cap wires disconnected from the power source and shunted until ready to test or fire. The individual removing the shunts should ground himself prior to this operation to prevent accumulated static electricity from firing the blasting cap.
6. Always fire electric blasting caps with firing circuits in the range recommended by the manufacturer.
7. Never connect blasting caps to the firing circuit unless the power end of the firing circuit is shunted.
8. Always keep the firing circuit completely insulated from ground or other conductors.

9. Always be sure that all wire ends are clean before connecting.
10. Never use any instruments, such as electrician's meters, that are not specifically designed for testing blasting circuits or blasting caps. Such meters produce sufficient electrical energy to prematurely initiate electric blasting caps which can result in injury or death.
11. Never mix electric blasting caps made by different manufacturers in the same circuit.
12. Never mix electric blasting caps of different types in a circuit, even if made by the same manufacturer, unless such use is approved by the manufacturer.
13. Never use aluminum wire in a blasting circuit.
14. Never make the final hookup to the power source until all personnel are clear of the exclusion zone.

UXO DISPOSAL CHECKLIST

A. _____	Approval of disposal plan from Senior UXO Supervisor and Base Environmental Department and Safety Department Safety Representative.
B. _____	Site is secure. Appropriate EZ is established. Use 2,500-feet for UXO less than 5-inches in diameter. Use 4,000-feet for UXO 5-inches in diameter and greater.
C. _____	Ensure the blasting machine is in control of the downrange team.
D. _____	Test the firing cable for continuity and short the wires or clips.
E. _____	Barricade the electric blasting caps (EBCs).
F. _____	Remove the shunt on an EBC.
G. _____	Facing away from the barricade, test the continuity of the EBC with a galvanometer.
H. _____	Replace the shunt or short the EBC.
I. _____	Repeat steps F, G, and H for the second EBC.
J. _____	Recheck the firing cable to ensure the cable is shorted.
K. _____	Make a parallel circuit and connect the leg wires of the EBCs to the firing cable.
L. _____	Connect the EBCs to the main charge. Return to the firing point.
M. _____	Using binoculars, ensure the area is clear and blow the air or vehicle horn three times.
N. _____	Fire the charge.
O. _____	Conduct a destruction site inspection.

A _____	Approval of disposal plan from Senior UXO Supervisor and Base Environmental Department and Safety Department Safety Representative
B _____	Site is secure. Appropriate EZ is established. Use 2,500-feet for UXO less than 5-inches in diameter. Use 4,000-feet for UXO 5-inches in diameter and greater.
C _____	Place and secure demolition charges/devices on targets
D _____	Warning: Do not place caps in charges until instructed to do so in the procedure below.
E _____	Lay out the shock tube, with caps attached, from near (one to two feet) charges to initiating point.
F _____	After the shock tube(s) have been laid out all the way to the site from where the detonation is to be initiated, the designated operator must maintain absolute control of the initiating element. Assure all personnel are moved to a safe distance from the charge(s) at this time.
G _____	The designated operator will return to the site from which the charge(s) will be initiated and, when it is near time to initiate the shot, will secure the initiating element to the shock tube.
H _____	Cut off the crimped/sealed end of the shock tube and push it into the hole in the igniter's end cap as far as it will go. Twist the shock tubes a little to assure it goes into the smaller of the igniter's internal clutching devices. Once the shock tube has seated, hold the igniter securely and pull lightly on the shock tube to assure the shock tube is secure.
I _____	Assure that all personnel are at a safe distance or under cover appropriate to their distance from the explosives.
J _____	Grasp the igniter body firmly, with the pull ring firmly accessible to your other hand.
K _____	To fire the charge(s), sharply pull the igniter's pull ring to actuated the igniter. The pop of the igniter's primer should be heard.
L _____	Conduct a destruction site inspection.

ATTACHMENT B

GENERAL DEMOLITION MISFIRE PROCEDURES

GENERAL DEMOLITION ELECTRIC MISFIRE PROCEDURES

1.1 Safety Alert (Misfire Waiting Times)

EODB/TM 60A-1-1-31 (General Information on EOD Disposal Procedures) has changed the wait times for misfires as follows:

- Electric misfire: Wait 30 minutes after an electric misfire before beginning an investigation.

Electric Misfire Procedures

A.	Repeat firing attempts.
B.	Check firing circuit with galvanometer.
C.	Switch blasting machines, if possible.
D.	Repeat firing attempts.
E.	Check circuit with galvanometer.
F.	Short firing cable wires.
G.	Wait 30 minutes before going down range.
H.	Using new EBCs, countercharge the main charge.

GENERAL DEMOLITION ELECTRIC MISFIRE PROCEDURES

2.1 Safety ALert (Misfire Waiting Times)

EODB/TM 60A-1-1-31 (General Information on EOD Disposal Procedures) has changed the wait times for misfires as follows:

- Non-electric misfire: Wait 60 minutes after the maximum delay for any part of the demolition shot before beginning an investigation.

Non-Electric Misfire Procedures

A.	Wait 60 minutes after the maximum delay for any part of the demolition shot before going downrange.
B.	Using a new firing train, countercharge the main charge.

ATTACHMENT C

SHOCK TUBE INITIATING SYSTEM PROCEDURES

1.0 SHOCK TUBE INITIATING SYSTEMS

1.1 INTRODUCTION

In 1967 a system with "shock tube", a plastic tube with a very thin internal coating of aluminum and the high explosive HMX was introduced in Sweden by its inventor, Dr. Per Anders Persson. This system carried the trademark name of Nonel®. By the mid-1990s shock tube initiation had become the dominant non-electric initiation system used in the world.

1.2 BACKGROUND

Shock tube initiating systems utilizes a dust explosion phenomenon in an almost empty plastic tube to transmit the initiation signal. The plastic shock tube is composed of one or more layers of plastic, which are designed to enhance the physical properties with the interior always composed of Surlyn®. The Surlyn serves to bind the thin interior coating of reactive dust (HMX and aluminum) to itself. The shock tube is very insensitive to initiation by ordinary heat or impact and requires an intense high impulse shock to be energized. The most commonly used initiation sources are various forms of mechanical devices that utilize a shot shell primer activated by a firing pin. Also used is a hand-held initiation device, which generates its energy by use of a piezoelectric crystal. Tight connections to appropriate strength detonating cords or initiators also serve as means of initiation. Shock tubing transmits the signal at approximately 6500 to 7000 fps (1980-2120 m/sec). Normally the tubing remains intact after activation, and except for the disappearance of the internal coating appears as it did prior to activation. Under certain circumstances, however, tubing may rupture and hot gases may erupt through the opening. For this reason it is never advisable to hold the tubing in the hand during initiation. A variety of shock tube system configurations are available for specific applications. The U.S. military utilizes shock tube initiating systems and refers to them as Modernized Demolition Initiators (MDI). A complete discussion of MDI can be found at:

<http://www.wood.army.mil/PUBS/fm5-34/Ch9flw.htm#tab9-12>.

1.3 SAFETY PRECAUTIONS WHEN USING SHOCK TUBE SYSTEMS.

1. Always ensure that shock tubing connections to detonating cord are at right angles to prevent angle cut-offs.
2. Always avoid situations where initiation system components can become entangled in machines, equipment, vehicles or moving parts thereof.
3. Always lead shock tube to the hole in a straight line and keep it taut.

4. Always follow the manufacturers' recommendations when cutting and splicing lead-in trunkline shock tube.
5. Never drive any vehicles over shock tube.
6. Never tie together two lengths of shock tubing. An initiation signal will not pass through a knotted connection.
7. Never pull, stretch, kink or put tension on a shock tube such that the tube could be caused to break or otherwise malfunction.

1.4 DETONATION PROCEDURES/SHOCK TUBE PRIMING (NONEL®)

- 1.4.1 Disposal activities are inherently hazardous and require strict adherence to approved safety and operational procedures. Violations of procedures may result in immediate removal from this project and/or termination of employment. During disposal operations, the SUXOS will ensure that:

- The area is clear and remains clear of personnel;
- Disposal shots are configured in a manner that precludes fragments from entering inhabited areas; and
- Positive control over the detonation is maintained.

- 1.4.2 Shock tube priming of explosives offers the instantaneous action of electric detonation without the risk of accidental initiation of the blasting cap (and the charge) by radio transmitters in the area, or by static electricity discharge. The explosion of the shock tube is totally contained within the plastic tubing, but the explosion of the aluminum tube is just like any other similar strength blasting cap.

1.4.3 Firing Procedure

1. Place and secure demolition charges/devices on targets.
2. Warning: Do not place caps in charges until instructed to do so in the procedure below.
3. Lay out the shock tube, with caps attached, from near (one to two feet) charges to initiating point.
4. After the shock tube(s) have been laid out all the way to the site from where the

detonation is to be initiated, the designated operator must maintain absolute control of the initiating element. Assure all personnel are moved to a safe distance from the charge(s) at this time.

5. The designated operator may now proceed back to the demolition charge(s) and install the cap(s) in the charge(s).
6. The designated operator will return to the site from which the charge(s) will be initiated and, when it is near time to initiate the shot, will secure the initiating element to the shock tube.
7. Cut off the crimped/sealed end of the shock tube and push it into the hole in the igniter's end cap as far as it will go. Twist the shock tube a little to assure it goes into the smaller of the igniter's internal clutching devices. Once the shock tube has seated, hold the igniter securely and pull lightly on the shock tube to assure the shock tube is secure.
8. Assure that all personnel are at a safe distance or under cover appropriate to their distance from the explosives.
9. Grasp the igniter body firmly, with the pull ring firmly accessible to your other hand.
10. To fire the charge(s), sharply pull the igniter's pull ring to actuate the igniter. The pop of the igniter's primer should be heard.

1.4.4 Splicing Shock Tube

The high reliability of shock tube blasting caps is the fact that all of the components are sealed and, unlike standard non-electric priming components, cannot be easily degraded by moisture. Cutting the shock tube makes the open end vulnerable to moisture. Care will be taken to keep moisture from the cut end of the shock tube. In general:

- When cutting a piece of shock tube, immediately tie a tight overhand knot in both cut ends (unless it will be spliced immediately).
- Always use a sharp knife or razor blade to cut shock tube so the opening in the tubing will be unobstructed.
- Always cut shock tube squarely across and make sure the cut is clean.
- Use only the splicing tubes provided to make splices. Taping two cut ends of shock tube together does not make a reliable splice.

- Every splice in shock tube reduces the reliability of the priming system. Keep the number of splices in a shock tube line to as few as practicable.

The following is the proper splicing procedure for shock tube:

1. Use a sharp knife or razor blade to cut approximately 18 inches from the previously cut off end of left over shock tube, whether or not it was knotted in accordance with the above guidance. Dispose of the 18-inch piece of shock tube in accordance with local regulations on such flammable items.
2. Cut off the free, sealed shock tube end of the cap to be extended with a sharp knife or razor blade.
3. Loosely tie the two shock tube ends to be spliced together in a square knot. Leave at least a two-inch free end of each shock tube beyond the knot. Push the shock tube lightly to tighten the knot, but not so tight as to significantly deform the shock tube in the knot.
4. Push one of the free shock tube ends to be spliced firmly into one of the pre-cut splicing tubes at least 1/4 inch. Push the other shock tube end firmly into the other end of the splicing tube at least 1/4 inch.
5. Spool out the desired length of shock tube and cut it off with a sharp knife or razor blade.
6. Immediately seal off the shock tube remaining on the spool by tying a tight overhand knot in the cut off end.
7. Attach an initiator to the cut end of the shock tube spliced to the blasting cap in accordance with standard operating procedures or tie a tight overhand knot in this end if it is to be actuated by another blasting cap or detonating cord.

1.4.5 Misfires with Shock Tube

The following steps should be performed in the advent of a misfire to rectify the situation:

1. The most common cause of a misfire in a shock tube priming system is the initiating element. The most common failure with this system is the primer not firing. The corrective action is to re-cock the igniter by pushing in on the pullrod to re-engage the firing pin and then actuate the igniter again.
2. If two or three retries with the igniter do not result in it firing, cut the shock tube, install a

new igniter, and repeat firing procedure.

3. Another misfire mode with the igniter is that the primer fires, but blows the shock tube out of its securing mechanism without firing it. The corrective action is to cut approximately six inches from the end of the shock tube, replace the igniter, and repeat firing procedure.
4. If the igniter appears to have functioned properly (primer pops and smokes), but the charge did not fire, cut a one-foot section from the shock tube starting approximately six inches from the igniter. Hold the one foot piece of shock tube so that one end is over the palm of your hand and gently blow through the other end. If a fine powder is blown from the shock tube, it has not fired. If this is the case, install a new igniter on the freshly cut end of the priming shock tube.
5. If the igniter/initiating element functioned properly and no fine powder was blown from the shock tube in the previous step, or the shock tube was heard to fire or its flash was seen, observe the standard half hour waiting time before going downrange to check the next element(s) in the priming train. Shock tube blasting caps are non-electric blasting caps and the standard rules apply in the event of a misfire.
6. After the half hour waiting time has passed, precede down-range and check the detonator of the first component in the priming train. If the detonator has not fired, attach an identical component to the shock tube (or detonating cord) of the uninitiated second component close to the unfired detonator of the failed component. Lay out the shock tube of the replacement component back to the site from which the shot is to be initiated and repeat the standard initiator attachment and fire when it is safe to do so.
7. After the charge has been fired, deal with the unfired relay cap and its attached (partially fired) shock tube in accordance with standard procedures for disposing of an unfired blasting cap.
8. If the first compartment of the firing train was not the one which failed, check out each succeeding component until the failed one is found and replace the failed or fired relay components back to the initiating site as in step 6. To determine if the shock tube has fired at a particular point, step 4 may be done with a one-foot section of shock tube cut from the suspect area.
9. If the failed component appears to be the final blasting cap, it may be replaced as above if

it is above the ground and easily accessible. If it is below ground or placed in a plastic explosive charge, it must not be disturbed. At this point, use the procedures for electric firing systems.

10. Never yank or pull hard on the shock tube because it may actuate the detonator.

1.5 MISFIRES USING SHOCK TUBE INITIATION SYSTEMS

The following are general procedures to be employed in the event of a misfire while using a shock tube initiation system:

1. In most misfires of the shock-tube blasting caps, which are non-electric, apply the standard rules.
2. If the primer does not fire (the most common problem), attempt to re-actuate the igniter again. If two or three retries result in a non-firing, cut the shock tube, replace the igniter with a new one, and repeat the firing procedure.
3. If the primer fires and blows the shock tube out of its securing mechanism without it firing, cut about 3 feet from the end of the shock tube, replace with a new igniter, and repeat the firing procedure.
4. If the primer appears to have functioned properly but the charge did not fire, cut a 1-foot section from the shock tube starting 6 inches from the igniter. Hold the 1-foot piece of shock tube so one end is over your palm; gently blow through the other end. If a fine powder comes out from the shock tube, it has not fired. Install a new igniter on the freshly cut end of the priming shock tube and repeat the firing procedure. If no fine powder comes out from the shock tube or the shock tube was heard to fire or its flash was seen, wait for 30 minutes before moving downrange to check the components in the firing system.
5. After waiting 30 minutes, proceed downrange and check all components in the firing system.
6. If the first component of the firing train did not fail, check out each succeeding component until you find the one that failed. Replace the failed or fired relay components back to the initiating site and re-fire.
7. If the final high-strength blasting cap seems to be the failed component, replace it if it is easily accessible. However, if it is used to prime an explosive charge, do not disturb it.

Place a new, primed explosive charge next to the misfired charge and detonate it when it is safe.

APPENDIX C

EXPLOSIVES MANAGEMENT PLAN

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Acronyms and Abbreviations

AEDA	Ammunition Explosives Dangerous Articles
AHA	Activity Hazard Analysis
ATF	Alcohol, Tobacco, and Firearms
BATF	Bureau of Alcohol, Tobacco, and Firearms
BIP	Blow in Place
CCLI	Commerce Control List Items
CEHNC	U.S. Army Engineering and Support Center, Huntsville
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CWM	Chemical Warfare Material
DOD	Department of Defense
DOT	Department of Transportation
DRMO	Defense Reutilization Marketing Office
EBCs	Electric blasting caps
EED	Electro-explosive devices
EMR	Electromagnetic Radiation
EODB/TM	General Information on EOD Disposal Procedures
EP	Engineering Pamphlet
EZ	Exclusion Zone
HE	High Explosive
HTRW	Hazardous, Toxic, and Radioactive Waste
MCX	Mandatory Center of Expertise
MDI	Modernized Demolition Initiators
MLI	Munitions List Items
MPH	Miles per hour
NAVSEAINST	Naval Sea Systems Command Instruction
NEW	Net Explosive Weight
NWS	Naval Weapons Station
OE	ordnance and explosives
OP	Ordnance Publication
PPE	Personal Protective Equipment
RCRA	Resource Conservation and Recovery Act
ROICC	Resident Officer in Charge of Construction
SOP	Standard Operating Procedure
SSHASP	Site-Specific Health and Safety Plan
SUXOS	Senior UXO Supervisor
TNT	Tri-Nitro-Toluene
QRP	Qualified Recycling Program
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UXO	unexploded ordnance

1.0 Explosives Management Plan

This Explosives Management Plan provides details for management of explosives at Naval Weapons Station Yorktown to support ordnance and explosives (OE) support for remedial HTRW activities. This plan was developed in accordance with OP5, Federal Acquisition Regulation 45.5, local and state laws and regulations, Alcohol, Tobacco, and Firearms (ATF) P 5400.7, Department of Defense (DOD) 6055.9-STD, United States Department of Transportation (DOT) regulations, and Army Regulation 190-11.

1.1 Acquisition

Shaw E&I will acquire commercial explosives from a local vendor or vendors who will deliver the materials to the project site. Shaw maintains a valid Bureau of Alcohol, Tobacco and Firearms (BATF) user of high explosives permit. Explosives vendors with a valid dealer BATF license will be utilized. A copy of the BATF dealer license and the Shaw user permit will be maintained at the project site, and upon request, will be made available to any local, state, or federal authority.

Types and estimated quantities of explosives and their intended use during the former OE project are specified below. The commercial explosives vendor identified for this unexploded ordnance (UXO) Remediation Support project are J&J Enterprises of Chesapeake, Virginia and Omni Distributors of Memphis Tennessee. Typically, the following explosives will be used for disposal of UXO or venting of inert munitions:

- One-half pound Cast Boosters will be used to detonate the UXO.
- Detonating cord will be used to construct mainline-branch line shots, to link multiple shots together, or to transmit the explosive train to the main charge explosive when the main charge is buried (tamped), underwater, or otherwise inaccessible.
- NONEL Initiators will be used to initiate the explosive train. NONEL tubing will be used to transmit the explosive train from the igniter to the demolition devices. Shock tube priming of explosives offer the instantaneous action of electric detonation without risk of accidental initiation of the blasting cap (and the charge) by radio transmitters in the area, or by static electricity discharge. The explosion of the shock tube is entirely contained within the plastic tubing.

1.2 Initial Receipt

The explosive vendor will deliver the explosive materials to the magazines on an as-required basis. An initial receipt inventory will then be conducted. Explosives in unsealed boxes containing partial lots will be opened, and the contents of the box will be counted. Any discrepancies between the actual type and quantity of explosives received and the shipping documentation will be noted on the shipping documentation with the signatures of both the delivery driver and the individual authorized to receive such explosives. A legible copy will be filed on site. The authorized individual receiving the explosives will immediately inform the UXO Supervisor of the discrepancy, who will in turn notify the Base Environmental Department or ROICC OE Safety Specialist and Project Manager. The informed managers will take the appropriate action as described in Section 1.7, "Lost, Stolen, or Unauthorized Use."

The quantities received will be consumed on the day delivered or returned to the vendor. Explosive materials will not be stored on site. A copy of the receipt documentation will be filed at the on-site office and placed in the project's permanent archive file.

1.3 Storage

Since no explosives will be stored on this site, the establishment of an explosive storage facility is not required.

1.4 Transportation

This section presents the vehicle requirements and on-site transportation procedures for explosives at NWS Yorktown.

1.4.1 On-Site Transportation Procedures

Explosives will be delivered to the project by a licensed and permitted commercial explosives vendor. When explosives are required at the work site, Shaw E&I UXO personnel will transport the explosives in an appropriately placarded vehicle following the procedures stated in this section to the designated area when demolition activities are planned.

Recovered UXO will not be moved.

On-site transportation procedures will include the following safeguards:

- The driver of any explosive-laden vehicle will ensure that the load is properly braced and that the initiators are carried separately from main charge explosives.
- The UXO Supervisor or in-charge authorized individual of the explosives movement will ensure that the driver and any passengers are not carrying any

smoking products or flame producing devices. Smoking will be strictly forbidden among all personnel involved in the handling or transportation of explosives.

- If loose pyrotechnic, tracer, flare, or similar mixtures are to be transported, they will be placed in #10 mineral oil or equivalent to minimize fire and explosion hazards.
- If an unfired rocket motor must be transported, it shall be positioned in such a manner as to offer the maximum protection to personnel in the event of an accident.
- If base-ejection type projectiles must be transported to a disposal area or collection point, the base will be oriented to the rear of the vehicle and the projectile secured, in the event the ejection charge detonates in route.
- All UXO items will be positively identified, as to the type of munition, filler, and condition of the fuzing prior to any movement.
- If a UXO, with exposed hazardous filler (high explosives, etc), has to be moved to a disposal area, the item will be placed in an appropriate container with packing materials to prevent migration of the hazardous filler. Padding will also be added to protect the exposed filler from heat, shock, and friction.

1.4.2 Vehicle Requirements

Vehicles transporting explosives on the project site will comply with the following requirements:

- Vehicles transporting explosives will be placarded when carrying any Class 1 explosives.
- All vehicles transporting explosives will be equipped with reliable communications, a first aid kit, and two 10-pound BC fire extinguishers. One extinguisher will be located in the driver's compartment and the other located in the cargo compartment.
- Vehicles transporting explosives will be inspected daily when in use, and the inspections will be documented on a Explosives Transportation Vehicle Safety Checklist (Attachment A).
- The vehicle used to transport the explosives will have a non-sparking bed liner, and all explosive loads will be covered prior to departure.

1.5 Receipt Procedures

This section describes the procedures that Shaw E&I will use to maintain records of explosives inventories at the NWS Yorktown.

1.5.1 *Inventory Control and Records Management*

An accurate running inventory of all explosives on site will be maintained. Copies of all paperwork pertaining to explosives delivery will be maintained by the SUXOS in the field office.

1.5.2 *Authorized Individuals*

The UXO Supervisor will be responsible for the proper receipt and issue of explosives for detonation purposes. He or she may authorize other specific individuals to perform the receipt and initial inventory of the explosives, but cannot delegate the responsibility for ensuring that the inventory, receipt, daily storage, and handling of the explosives is performed in accordance with the requirements of this plan. Any individual authorized to receive explosives will be at least a UXO Technician III.

1.5.3 *End User Certification*

The UXO Supervisor, as the end user of explosives, will certify in writing that the explosives were used for their intended purpose. This information is tracked on the Explosives Usage Record (Form 1-2) and is included with daily reporting.

1.5.4 *Reconciling Discrepancies*

In the event that there is a discrepancy with any aspect of the management of explosives, the UXO Supervisor together with the Shaw E&I site supervisor, will review documentation to determine whether the discrepancy is a paperwork error or whether explosives have been lost or stolen. If it is concluded that explosives have been lost or stolen, the ROICC will be notified and the procedures specified in Section 1-7 will be implemented.

1.6 *Inventory*

Since no explosives will be stored on this project site, the inventory of explosives refers only the receipt and expenditure of the explosives ordered for a single day's activity.

1.7 *Lost, Stolen, or Unauthorized Use of Explosives*

If explosives are discovered to be lost, stolen, or used without authorization, the incident will be immediately reported to the Shaw E&I project officer, who in turn, will inform the Shaw E&I OE Service Center and Government Project.

As the federal licensee, Shaw E&I is required by law (27 CFR 55.30) to report the theft or loss of explosives to the BATF within 24 hours. In the event of such an occurrence, the following procedures will be followed:

- Shaw E&I will make the appropriate notifications in accordance with 27 CFR 55.30. These include calling BATF (800-424-9555) and the local law enforcement authorities.
- Shaw E&I will be responsible for completing and forwarding BATF Form 5400.5 (Form 1-3). This form will be completed by the SUXOS, and a copy will be provided to the USACE OE Safety Specialist.

1.8 Disposal of Explosives

All explosives used for this project will be ordered and consumed. There will be no storage of explosives on site.

EXPLOSIVES TRANSPORTATION VEHICLE SAFETY CHECKLIST¹

This checklist will be satisfactorily completed prior to loading an explosives transportation vehicle. The completed and signed checklist will be kept on the on-site safety files.

Senior UXO Supervisor (authorizing transportation of explosives) _____

Explosives to be transported: _____

Check the following items to ensure they are in good working order:

Initials	Item
1.	Vehicle body (including non-sparking bed or transportation box)
2.	Tires
3.	Windshield and wipers
4.	Rear view mirrors
5.	Placarding (as required by cargo)
6.	2 ABC fire extinguishers
7.	Lights (emergency, head, parking, running, interior, backing, turn signals)
8.	Engine (oil, coolant, belts, battery, brake fluid, wiper fluid)
9.	Horn
10.	Fuel
11.	Brakes
12.	Operational radio (successful communication check performed)
13.	Driver know the route to be taken (attach map if required)
14.	Load properly segregated and secured
15.	Permission received from Senior UXO Supervisor to transport explosives
16.	Perform notification of departure
17.	Perform notification on arrival at destination

Emergency Phone Numbers: _____

Driver _____

Safety Observer _____

¹ This checklist is for on-site explosives transportation only.

FORM 1-1

Explosives Transportation Vehicle Safety Checklist¹

This checklist will be satisfactorily completed prior to loading an explosives transportation vehicle. The completed and signed checklist will be kept on the on-site safety files.

Senior UXO Supervisor (authorizing transportation of explosives) _____

Explosives to be transported: _____

Check the following items to ensure they are in good working order:

Initials	Item
1.	Vehicle body (including non-sparking bed or transportation box)
2.	Tires
3.	Windshield and wipers
4.	Rear view mirrors
5.	Placarding (as required by cargo)
6.	2 ABC fire extinguishers
7.	Lights (emergency, head, parking, running, interior, backing, turn signals)
8.	Engine (oil, coolant, belts, battery, brake fluid, wiper fluid)
9.	Horn
10.	Fuel
11.	Brakes
12.	Operational radio (successful communication check performed)
13.	Driver know the route to be taken (attach map if required)
14.	Load properly segregated and secured
15.	Permission received from Senior UXO Supervisor to transport explosives
16.	Perform notification of departure
17.	Perform notification on arrival at destination

Emergency Phone Numbers: _____

Driver _____

Safety Observer _____

¹ This checklist is for on-site explosives transportation only.

FORM 1-2

EXPLOSIVES USAGE RECORD

Team Number: _____ Date: _____

Team Leader: _____ Project: _____

EXPLOSIVES ISSUED			
Signature of Team Leader: _____			
Item	Quantity	Lot Number	Checker's Initials

EXPLOSIVES EXPENDED			
Signature of Team Leader: _____			
Item	Quantity	Lot Number	Checker's Initials

EXPLOSIVES RETURNED			
Signature of SUXOS: _____			
Item	Quantity	Lot Number	Checker's Initials

UXO Supervisor Date _____

CHECKED BY _____ APPROVED BY _____

FORM 1-3

Form Approved: OMB No. 1512-0185 (04/30/95)

DEPARTMENT OF THE TREASURY BUREAU OF ALCOHOL, TOBACCO AND FIREARMS REPORT OF THEFT OR LOSS-EXPLOSIVE MATERIALS

DATE

Discovery of any theft or loss of any of your explosive materials:
call ATF toll free at 1-800-800-3855 (or call ATF collect at 1-900-800-3855 if you are in Alaska, Guam, Hawaii, Puerto Rico or the Virgin Islands);
to report the theft or loss;

-Second, call your local law enforcement office to report the theft or loss; and
-Third, complete this form and attach any additional sheets or invoices necessary to provide the required information, and mail to the nearest ATF office listed on the reverse. We suggest you retain a copy of the completed form. Please complete each item, as applicable, to the best of your ability.

NOTE: Section 842(k), 18 U.S.C., Chapter 40, states, "It shall be unlawful for any person who has knowledge of the theft or loss of any explosive materials from his stock to fail to report such theft or loss within twenty-four hours of discovery thereof to the Secretary and to appropriate local authorities." Codified at 27 C.F.R., Section 55.30.

1. NAME, ADDRESS AND TELEPHONE NUMBER OF PERSON MAKING REPORT (Include corporate or business name, if applicable)

2. LOCATION OF THEFT OR LOSS (If different from item 1)

3. THEFT OR LOSS	DATE	TIME
a. DISCOVERED		
b. OCCURRED (Show approximate if exact not known)		
c. REPORTED TO ATF BY TELEPHONE		
d. REPORTED TO LOCAL AUTHORITIES		

4. NAME AND ADDRESS OF LOCAL AUTHORITY TO WHOM REPORTED

5. EXPLOSIVE MATERIALS LOST OR STOLEN (Attach invoices or additional sheets, if necessary)

a. MANUFACTURER OR BRAND NAME (Include date and shift code)	b. QUANTITY (Pounds of Explosives, Number of Caps)	c. TYPE AND DESCRIPTION (Dynamite, Blasting Agents, Detonators, etc. Include for each type, size, MS delay or length of legwire, as applicable)

6. THEFT OR LOSS OCCURRED FROM (Check applicable box)

☐ PERMANENT MAGAZINE ☐ PORTABLE MAGAZINE ☐ TRUCK ☐ WORK SITE ☐ OTHER (Explain)

7. ENTRY TO MAGAZINE MADE THROUGH (Complete if applicable)

☐ DOOR ☐ ROOF ☐ FLOOR ☐ FOUNDATION
☐ WALL ☐ CEILING ☐ VENTS ☐ OTHER (Explain)

8. NUMBER AND TYPE OF LOCKS FORCED (Complete if applicable)

9. OTHER INFORMATION PERTINENT OF THE THEFT OR LOSS

SIGNATURE AND TITLE OF PERSON MAKING REPORT

11. FEDERAL EXPLOSIVES LICENSE OR PERMIT, IF ANY

FOR ATF USE ONLY

DATE RECEIVED

TIME RECEIVED

UNIQUE IDENTIFIER

FORM 1-3

ADDRESS LISTING OF ATF OFFICES

Forward this completed form to the nearest ATF Office listed below (alphabetically by City):

- | | |
|---|---|
| 1) 101 Marietta St., NW, Ste. 406
Atlanta, GA 30303 | 12) 350 S. Figueroa Street, Ste. 800
Los Angeles, CA 90071 |
| 2) 103 South Gay St., 2nd Floor
Baltimore, MD 21202 | 13) Bank of Louisville Bldg.
510 West Broadway, Ste. 807
Louisville, KY 40202 |
| 3) 2121 8th Ave. N., Rm. 725
Birmingham, AL 35203 | 14) 6420 NW 52nd St., Ste. 120
Miami, FL 33166 |
| 4) The Boston Federal Building
10 Causeway St., Rm. 701
Boston, MA 02222-1081 | 15) Nashville Koger Center
215 Centerview Dr., Ste. 215
Brentwood, TN 37027 |
| 5) 4530 Park Road, Ste. 400
Charlotte, NC 28209 | 16) Executive Plaza Bldg., Ste. 309
10001 Lake Forest Blvd.
New Orleans, LA 70127 |
| 6) 1 South 450 Summit Ave., Ste. 250
Oak Brook Terrace, IL 60181 | 17) 90 Church St., Rm. 1015
New York, NY 10007 |
| 7) Plaza South One, Rm. 301
7521 Engle Road
Middleburg Hgts, OH 44130 | 18) US Customs House, Rm. 504
2nd & Chestnut Streets
Philadelphia, PA 19106 |
| 8) 1200 Main Tower Bldg., Ste. 2550
Dallas, TX 75250 | 19) 221 Main Street, Ste. 1250
San Francisco, CA 94105 |
| 9) 231 W. Lafayette St., Rm. 533
Detroit, MI 48226 | 20) 915 2nd Avenue, Rm. 806
Seattle, WA 98174 |
| 10) 15355 Vantage Pkwy West, Ste. 210
Houston, TX 77032 | 21) 100 South 4th Street, Ste. 550
St. Louis, MO 63102 |
| 11) 811 Grand Ave., Rm. 106
Kansas City, MO 64106 | 22) 1670 Minnesota World Trade Center
30 East Seventh Street
St. Paul, MN 55101 |
| | 23) 507 14th Street, NW, Ste. 620
Washington, DC 20005 |

PRIVACY ACT INFORMATION

The following information is provided pursuant to section 3 of the Privacy Act of 1974 (5 U.S.C. § 522a(e)(3)).

- Authority.** Solicitation of this information is made pursuant to Title XI of the Organized Crime Control Act of 1970 (18 U.S.C. Chapter 40). Disclosure of a theft or loss of explosive materials is mandatory pursuant to 18 U.S.C. § 842(k) for any person who has knowledge of such theft or loss from his stock.
- Purpose.** The purpose for the collection of this information is to give ATF notice of the theft or loss of explosive materials, and to furnish ATF with the pertinent facts surrounding such theft or loss. In addition, the information is used to confirm and verify prior notification of this theft or loss of explosive materials.

3. **Routine Uses.** The information will be used by ATF to aid in the administration of laws within its jurisdiction concerning the regulation of explosive materials and other related areas. In addition, the information may be disclosed to other Federal, State, foreign, and local law enforcement of laws within their jurisdiction.

4. **Effects of not supplying information requested.** 18 U.S.C. § 842(k) makes it unlawful for any person, who has knowledge of the theft or loss of explosive materials from his stock, to fail to report such theft or loss within twenty-four hours of discovery thereof, to the Secretary and to appropriate local authorities. The penalty for violation of this section is a fine of not more than \$1,000 or imprisonment for not more than one year, or both. 18 U.S.C. § 844(b).

PAPERWORK REDUCTION ACT NOTICE

This request in accordance with the Paperwork Reduction Act of 1980. The purpose of this information collection is to report the theft or loss of explosive materials. The information is used for investigative purposes by ATF officials. This information is mandatory by statute. (18 U.S.C. 842)

The estimated average burden associated with this collection of information is 1 hour and 46 minutes per respondent or recordkeeper, depending on individual circumstances. Comments concerning the accuracy of this burden estimate and suggestions for reducing this burden should be addressed to Reports Management Officer, Information Programs Branch, Bureau of Alcohol, Tobacco and Firearms, Washington, D. C. 20226, and the Office of Management and Budget, Paperwork Reduction Project 1512-0185, Washington, D.C. 20503.

APPENDIX D

UXO Related Scrap Metal Collection and Inspection Procedures For UXO Support at NWS Yorktown

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1.0 Purpose

This SOP is intended to guide Shaw Environmental and Infrastructure, Inc. (Shaw E&I). UXO Technicians in the safe and efficient handling and disposal of ordnance explosives (OE)/unexploded ordnance (UXO) related scrap metal found at Shaw E&I project sites. The inherently dangerous characteristics of Ammunition Explosives Dangerous Articles (AEDA) dictate that special precaution be taken to ensure that demilitarization is performed only by properly trained and technically qualified personnel. This procedure is general in nature and may contain more information (i.e., on-site detonations) than is required for this project. UXO items that are determined to be inert will be demilitarized on site. Other items such as safe-to-move and unsafe-to-move will either be shipped off site for disposal (safe-to-move) or remain in place and notification made to Resident Officer in Charge of Construction (ROICC).

2.0 Background

The procedures below are designed to reduce the potential pitfalls of improperly handling (comingling of hazardous and non-hazardous scrap) OE scrap items.

References

- | | |
|-----------------|---|
| DoD 4160.21-M | Department of Defense Reutilization and Marketing Manual |
| DoD 4160.21-M-1 | Department of Defense Demilitarization Manual |
| TB 700-4 | Department of the Army Technical Bulletin - Decontamination of Facilities and Equipment |

3.0 Collection Procedures

Safety Not for UXO Technicians: Whenever an AP, training, practice, non-standard or altered ordnance item is encountered, it will assumed to be HE filled if there is an identically configured HE filled munition and the HE cavity is not accessible to visual examination. The item must then be x-rayed, countercharged, or penetrated with a shaped charge before it can be declared inert. When using shaped charge ensure the ordnance item is penetrated in the area that would contain the HE cavity. In the case of a 90mm AP round, this area is approximately 2 to 3 inches up from the base.

At the operating site, Shaw E&I will preposition two scrap metal containers. One container will be marked "Non-OE Scrap Metal" and will be used to collect general metal debris. The other container will be marked "Ordnance Related Scrap Metal" and will be used to collect nonhazardous ordnance related scrap metal (i.e. Metal components that do not contain any explosives or other hazardous materials). All small arms will be visually inspected and certified inert. Any other OE scrap will be visually inspected and certified 5X.

A UXO technician will examine any inert OE or metal removed from the site and categorize it as OE or non-OE Scrap. The item will then be placed in one of the two designated separated piles.

4.0 Removal and Segregation of Scrap Metal

The OE related scrap will be inspected and divided into two groups: 1) OE related scrap requiring further demilitarization; and 2) OE related scrap that does not require further demilitarization.

The UXO Supervisor will inspect the OE scrap piles and direct that they be placed in the OE scrap collection container according to group. For purposes of disposal, UXO items shall be segregated and defined as Group 1a, Group 1b, or Group 2.

4.1 Group 1 Scrap Metal

Group 1 includes property that previously contained explosives or that does not contain items of a dangerous nature and can be certified inert and/or free of explosives or other dangerous materials such as targets, certain expended ordnance, etc.

4.1.1 Group 1a Scrap Metal

Group 1a includes firing range expended small arms cartridge and inert metals. Metals include material for which the only use is for its basic material content (e.g. clean shrapnel, target metal, etc.) and does not include material with any residual utility or capability or that is considered to be Munitions List Items (MLI) or Commerce Control List Items (CCLI). Such material is eligible under the Resource Recovery and Recycling Program for disposition by a Qualified Recycling Program (QRP) in accordance with DoD 7514.1, Pollution Prevention. DoD Components may exercise direct sale authority for firing range expended small arms cartridge cases provided that it is crushed, shredded or otherwise destroyed prior to release from DoD control.

4.1.2 Group 1b Scrap Metal

Group 1b includes any certifiable material or item not meeting the criteria in 1a above. A determination shall be made as to whether the material/item requires demilitarization. Damage sustained to a UXO item does not necessarily constitute demilitarization. Destruction shall, at a minimum, satisfy the provisions of DoD 4160.21-M-1. This material is not eligible for a QRP.

4.2 Group 2 Scrap Metal

Group 2 includes inherently dangerous items that may potentially contain munitions residue and cannot be certified as inert, such as practice bombs.

5.0 Disposition of Munitions List Items

Demilitarization should be accomplished by the most cost effective method consistent with adequate security and surveillance as practical in accordance with existing environmental standards, safety and operational regulations, to the point of assuring freedom from explosives, toxic or incendiary materials, smoke content or design hazards

5.1 Assignment of Demilitarization Codes

The proper procedure requires that OE scrap be assigned a demilitarization code and that code determines the type of processing required. For almost all OE scrap the assigned code should be "G". Assignment of this code is the responsibility of the generating activity.

Definition of Demilitarization Code "G":

"G" MLI -- Demilitarization required - AEDA, Demilitarization, and if required, declassification and/or removal of sensitive markings or information, will be accomplished prior to physical transfer to a DRMO. This code will be used for all ADEA items, including those, which also require declassification and/or removal of sensitive marking or information. [When in doubt assign Demilitarization Code G for all recovered OE related scrap.]

5.2 Demilitarization Requirements

Demilitarization and decontamination of OE scrap is based on a system that assigns decontamination levels commensurate with the post treatment use. For metal that is being released to the public as recyclable, 5X is the acceptable degree of decontamination.

Three Xs indicate the equipment or facilities (in this case OE scrap) have been examined and decontaminated by approved procedures and no contamination can be detected by appropriate instrumentation, test solutions, or by visual inspections on easily accessible surfaces or in concealed housings, etc. and are considered safe for the intended use. Items decontaminated to this degree cannot be furnished to qualified DoD or Industry users or subjected directly to open flame cutting, welding, high temperature heating devices), or operations which generate extreme heat, such as drilling and machining. Newly implemented certification procedures require two signatures for certification, of which only one signature may be from a government contractor if demilitarized or decontaminated items are to be hauled off site as scrap.

The only acceptable way to get to 5X decontamination is by partial or complete removal, neutralization, or destruction of explosives/explosive residue by flashing, steaming, neutralization, or other approved desensitizing methods such as shredding. This is often expensive and nullifies the value of the scrap. However to leave OE scrap on a site increases the possibility of residues such as RDX, HBX, and TNT entering the ground water and causing a more expensive problem.

5.2.1 Ammunition - Method and Degree of Required Demilitarization

- **Artillery/Mortar Ammunition Components and Similar Items of All Types** including but not limited to high explosive, practice, inert loaded, incendiary, and smoke fillers. Remove explosive filler from projectile (wash out, burn out, etc.). Remove rotating band and deform fuze cavity threads or score or deform bourrelet or gas check band. Burn propellant unless otherwise instructed to retain for sale or other

purposes. Deform fin assembly threads or fin blades. Cartridge cases will be deformed by off-center punch-out of primer or split case neck or puncture the lower sidewall with a minimum of 3/4 inch hole or deform lower sidewall, which will prevent chambering, or crush or press. Burn out smoke mixture or detonate smoke canister.

- **Inert Loaded Ammunition, Projectiles, and Similar Items of All Types** loaded with inert filler to simulate service item. Remove rotating band from artillery projectiles and open the closure of the projectile body to expose the inert filler. On items without rotating bands, open the body closure to expose the inert filler and damage the closure surface to prevent reloading or resealing.

NOTE: For inert loaded items (concrete, sand, plaster) a potential explosive safety hazard exists when the internal filler is not exposed or unconfined during burning. Melting, or cutting. Heat generated from a demilitarization process can cause the filler, moisture and air to expand and burst sealed casings. For this reason, DRMOs will not accept inert loaded items unless the internal filler is exposed and unconfined. The internal filler may be exposed by removal of the fuze well from the cavity, removal of base plates, or by puncturing/drilling holes in the bomb casing.

- **Category III Ammunition and Components Which Have Been Fired or Expended and Other Non-Explosive Items.** All items will be rendered free of energetic materials prior to accomplishment of demilitarization. Range residue will be processed in accordance with the defense Material Disposition Manual, DoD 4160.21-M, Chapter 4, paragraph B.3, after all required demilitarization is accomplished.

- **Artillery/Mortar Ammunition Components and Similar Items of All Types.** Remove rotating band and deform fuze cavity threads or score or deform bourrelet or gas check band. Score practice round with a torch, displacing a minimum of one cubic inch of metal or shear into two pieces. Deform fin assembly threads and fin blades.
- **Inert Loaded Ammunition, Projectiles, and Similar Items of All Types** loaded with inert filler to simulate service item. Remove rotating band from artillery projectiles and open the enclosure of the projectile body to expose the inert filler. On items without rotating bands, open the body closure to expose the inert filler and damage the closure surface to prevent relocating or resealing. **NOTE:** For inert loaded items (concrete, sand, plaster) a potential explosive safety hazard exists when the internal filler is not exposed or unconfined during burning, melting, or cutting. Heat generated from a demilitarization process can cause the filler, moisture and air to expand and burst sealed casings. For this reason, DRMOs will not accept inert loaded items unless the internal filler is exposed and unconfined. The internal filler may be exposed by removal of the fuze well from the cavity, removal of base plates, or by puncturing/drilling holes in the bomb casing.

- **Other Nonexplosive Filled Items** that perform a major function essential to the basic mission of the end item. Cut, crush, or process through a deactivation furnace. Burn or cut cartridge case lines and propelling charge bags. Cut, burn, or crush aircraft and ground signal cases. Crush or detonate piezoelectric (lucky) elements.

5.2.2 Category V. Military Explosives, Solid and Liquid Propellants, Bombs, Mines, Incendiary Agents, and Their Constituents - Method and Degree of Required Demilitarization

- **Artillery/Mortar Ammunition Components and Similar Items of All Types** including but not limited to high explosive, practice, inert loaded, incendiary, and smoke fillers. Remove explosive filler from projectile (wash out, burn out, etc.). Remove rotating band and deform fuze cavity threads or score or deform bourrelet or gas check band. Burn propellant unless otherwise instructed to retain for sale or other purposes. Deform fin assembly threads or fin blades. Cartridge cases will be deformed by off-center punch-out of primer or split case neck or puncture the lower sidewall with a minimum of 3/4 inch hole or deform lower sidewall, which will prevent chambering, or crush or press. Burn out smoke mixture or detonate smoke canister.
- **Inert Loaded Projectiles, Warheads and Similar Items of All Types** loaded with inert filler to simulate service item. Remove fuze and/or spotting charge, where applicable, and burn or detonate. Remove rotating band from artillery projectiles and open the enclosure of the projectile body to expose inert filler. On items without rotating bands, open the body closure to expose the inert filler and damage the closure surface to prevent reloading or resealing.
- **Bombs and Similar Items of All Types**, including but not limited to high explosive, practice, inert loaded, incendiary and photo flash fillers, military explosive excavating devices, demolition blocks, and grenades. Demilitarization will be accomplished by removal of explosive filler in an approved manner (e.g., wash-out, burn-out, etc.) And by deforming fuze cavity threads or removing base plate by other than normal disassembly (such as sawing) or by detonation. Grenades will be demilitarized by cutting or crushing (a minimum of 75% compression) the grenade body after item has been defuzed and explosive removed or by detonation.
- **Small Explosive Items**, including but not limited to fuzes, boosters, primers, detonators, firing devices, ignition cartridges, blasting caps, grenade cartridges, tracer assemblies, and similar components. Demilitarization can be accomplished by processing through a deactivation furnace at settings of 1150 degrees at burner end and 450 to 500 degrees at stack end or by mutilation. Incendiary projectiles will normally be decored to expose and assist in the complete burning of the incendiary composition. Where decoring of projectile is not necessary, processing through the deactivation furnace is adequate. Burn out 20mm high-explosive (HE) projectiles by processing through the deactivation furnace or detonate. Processing complete small arms ammunition cartridges, all calibers, through the deactivation furnace at

controlled temperatures will result in adequate demilitarization. Fuzes and boosters can be disposed of by disassembly and cutting, drilling, or punching to deform metal parts. Explosive components generated through disassembly are to be burned or detonated. Fuzes may also be processed through a deactivation furnace as a complete item when disassembly is not feasible. For grenades demilitarization may be accomplished by removal of explosive components by crushing, cutting, breaking, melting, burning, or otherwise to fully preclude their rehabilitation or further use as grenade components. Demilitarization may also be accomplished by detonation or burning as appropriate for the particular item involved.

- **Rocket Motors, Warheads, Components and Similar Items of All Types**, including high explosive, inert, loaded, practice and smoke. Wash out or burn out rocket warhead filler and mutilate casing by crushing or cutting by torch and deforming threaded area. Disassemble and remove or burn out rocket motor propellant and cut or crush case, and deform threaded area of cases. Rocket motors and warheads may also be detonated.
- **Mines, Anti-Personnel/Anti-Tank Explosive, Components and Similar Items of All Types** including high explosive, practice, inert loaded associated explosive components. Wash out or burn out filler and mutilate by crushing, cutting by torch, deforming threaded area or detonate. Process mine fuzes, activators, and firing devices through a deactivation furnace, burn in a cage or detonate. Mine firing such as the M56 or M61 types should be crushed, cut, or burned.
- **Ammunition and Components Which Have Been Fired or Expended and Other Non-Explosive Items.** All items will be rendered free of energetic materials prior to accomplishment of demilitarization. Range residue will be processed in accordance with the defense Material Disposition Manual, DoD 4160.21-M, Chapter 4, paragraph B.3, after all required demilitarization is accomplished.
 - **Artillery/Mortar Ammunition Components and Similar Items of All Types** including but not limited to high explosive, practice, inert loaded, incendiary, and smoke fillers. Remove explosive filler from projectile (wash out, burn out, etc.). Remove rotating band and deform fuze cavity threads or score or deform bourrelet or gas check band. Score practice round with a torch, displacing a minimum of one cubic inch of metal or shear into two pieces. Deform fin assembly threads and fin blades. Defective cartridge cases will be deformed by off-center punch-out of primer or split case neck or puncture the lower sidewall with a minimum of $\frac{3}{4}$ inch hole or deform lower sidewall, which will prevent chambering, or crush or press. Burn out smoke mixture or detonate smoke canister.
 - **Inert Loaded Ammunition, Projectiles, and Similar Items of All Types** loaded with inert filler to simulate service item. Remove rotating band from artillery projectiles and open the enclosure of the projectile body to expose the inert filler. On items without rotating bands, open the body closure to expose the inert filler and damage the closure surface to prevent relocating or resealing. **NOTE:** For

inert loaded items (concrete, sand, plaster) a potential explosive safety hazard exists when the internal filler is not exposed or unconfined during burning, melting, or cutting. Heat generated from a demilitarization process can cause the filler, moisture and air to expand and burst sealed casings. For this reason, DRMOs will not accept inert loaded items unless the internal filler is exposed and unconfined. The internal filler may be exposed by removal of the fuze well from the cavity, removal of base plates, or by puncturing/drilling holes in the bomb casing.

- **Bombs and Similar Items of All Types**, including but not limited to high explosive, practice, inert loaded, incendiary and photoflash fillers, military explosive excavating devices, demolition blocks and grenades. Demilitarization will be accomplished by deforming fuze cavity threads or removing base plate by other than normal disassembly (such as sawing) or by detonation. Grenades will be demilitarized by cutting or crushing (a minimum of 75% compression) the grenade body after item has been defuzed and explosive removed or by detonation.
- **Rocket Motors, Warheads, Components and Similar Items of All Types**, including high explosive, inert loaded, practice and smoke. Demilitarize casing by crushing or cutting by torch or deforming threaded area. Cut, crush case, or deform threaded area of rocket motor cases.
- **Mines, Anti-Personnel/Anti-Tank, and Similar Items of All Types** including high explosive, practice, inert loaded and associated components. Demilitarize casing by crushing, or cutting by torch, and deforming threaded area or detonate. Mine firing devices such as the M56 or M61 types should be crushed, cut, or burned.
- **Instructions For Specific Ordnance Items:**
 - **BDU-50 Practice Bomb:**
 - a. Each bomb must be inspected by qualified EOD/UXO personnel to ensure that bombs are BDU-50s and that the bomb is expended. If the EOD/UXO personnel cannot verify both fuze wells, or absence thereof, it must be opened remotely by detonation.
 - b. A 1/4-inch hole will be punched in each of the two spanner wrench receptacles, fracturing the metal to a depth in excess of 1/10 inch into the concrete filler material.
 - c. A 1/4-inch punch will be utilized to further damage the threads of the nose plate, ensuring that the plate cannot be removed and replaced.
 - d. Fins will be deformed or broken and paint will then be used to place a mark of contrasting color on the bomb or near the nose.

- **Technical data** will be demilitarized by burning, shredding, or pulping.

5.2.3 Venting of OE Related Scrap

Prior and current practices have taken this to mean that if the OE item is intact and resembles a piece of military ordnance, such as a 105mm High-Explosive Anti-Tank (HEAT) (Practice) projectile, it should have a hole punched through the side to expose the filler as non-explosive. This is typically accomplished through the use of a shape charge attack. The explosively created hole exposes the filler and disfigures the projectile so that it could not be used again. For a 105mm HEAT (Practice) round this approach is sufficient because the projectile never contained any explosives or energetic material used as a spotting charge. For a MK- 82 Low Drag General Purpose (LDGP) Bomb (Practice) this approach may not be sufficient because the bomb can contain various types of explosively activated spotting charges that have the capability to cause injury or death if exposed to the right elements such as flame from a cutting torch. And there is always the possibility that a shape charge attack may punch a hole in an explosive ordnance item exposing the filler but not causing a detonation. Because some explosive fillers look like inert fillers the possibility for mis-identification and improper certification is real.

UXO known or suspected to be inert (filled with an inert substance to simulate the weight of an explosive filler) will be explosively vented with conical-shaped charges. For the purpose of determining the fragmentation hazard area for explosive venting, it will be assumed that the UXO has an explosive filler and that a high-order detonation will occur. Venting will be considered successful when the inert filler is exposed. The vented inert ordnance item can be treated and disposed as scrap after the venting and demilitarization process is complete.

6.0 Certification/Disposal of Scrap Metal

Shaw E&I will ensure that the quantities of demilitarized property turned in to the DRMO are accurate and that these quantities are readily verifiable by the DRMO. All OE Scrap will be accompanied with a Department of Defense (DD) Form 1348-1A contains the demilitarization code. In addition Shaw E&I will issue a letter specifying who is authorized to sign the statement of inert certification. This letter will be kept in the project files, at the local DRMO, and with Shaw E&I.

Prior to release of the material, the Senior UXO technician will physically inspect the material in the containers to ensure that they are free of dangerous items or conduct demilitarization operations. The Senior UXO Supervisor will sign the certificate, typed on the DD Form 1348-1A, which states:

“I certify that the property listed hereon has been inspected by me and, to the best of my knowledge and belief, contains no items of a dangerous nature.”

or

“I certify that (identify items) were demilitarized in accordance with (cite specific instructions ,Appendix and Item number)

that complied with in the DoD 4160.21-M-1
and other applicable regulations.”

The certification will be verified (countersigned) by a technically qualified U.S. government representative (U.S. citizen) designated by the responsible commander/generating activity.

Scrap will be segregated into like metals (mainly steel, aluminum, and mixed metal) and placed into pelletized wooden shipping boxes. Each item placed into an inert-certified box will be inspected. The boxes will be filled, the covers will be nailed on, and a lead seal will be affixed. A Statement of Inert Certification will then be attached to the box. The box can then be picked up by a local scrap yard for disposal or recycling.